was not involved in the growth, but was adherent to the rectum and could be separated from it by sponging with a gauze pad. The iliac colon was then divided, the proximal end brought out through an incision in the left rectus, and a Paul's tube tied in. The pelvic colon and rectum were then separated from the pelvis, along with all glands and areolar tissue, packed to the bottom of the pelvis under a covering of peritoneum, and were subsequently removed, along with the anus and muscles, by the perineal route. The only points in which this operation differed from that described by many surgeons is that, owing to the encroachment of the pregnant uterus, I could not divide the middle haemorrhoidal arteries and lateral ligaments of the rectum by the abdominal route, and had to leave them to be dealt with during the perineal portion of the operation. During the perineal dissection I removed a portion of the posterior fornix of the vagina where it lay in close proximity to the tumour. The loss of blood was small and shock so slight that it did not need any special treatment. Convalescence was uneventful, and the patient was allowed up on the sixteenth day after operation, as she was still very depressed, and lying in bed seemed to make her worse. The pathologist's report was: "Columnar-celled carcinoma of the rectum."

On November 8th Dr. Farrell very kindly sent me the following note:

"Mrs. K. returned home about a month after operation. She had gradually got back strength and every day improved in health. On June 30th she slipped and fell in her kitchen. About half an hour after the fall signs of labour set in and lasted for twelve hours without result, when she was given an injection of pituitary extract which, almost immediately, resulted in the birth of a small living male child. There was no trouble with the placenta. This is her tenth baby and he is still alive. Mrs. K. is now doing well, says she never felt better in her life, is increasing in weight, and has a good appetite. The artificial anus is doing splendidly. She thinks that she is pregnant again."

The anaesthetic used in both these cases was ether, administered from a wide-bore Clover's inhaler.

As is well known to most surgeons, there are two "schools" of rectal surgery. One advocates the perineal route for excision, the other despises anything except the combined abdominal and perineal operation.

In the first case I made use of the perineal route, with preliminary exploration and colostomy, because I had no reason to suspect involvement of the uterus, etc., and I considered that the two-stage operation would be less severe on the patient.

In the second case I made use of the combined method, because I meant to remove the uterus and appendages, if necessary, and also because, owing to the depressed state of the patient's mind, I did not think she would consent to a two-stage operation. One cannot expect to operate upon a sufficient number of such cases to enable one to draw up statistics, but the lesson which I have learnt from these two cases is that the two-stage operation is much easier, and I think it should be the method chosen in cases where pregnancy is a complication, unless there is some special reason for the one-stage operation.

Before passing on to more problematical subjects, I would like to state my personal opinion that the incision through the left rectus is the best for colostomy, either with or without a median incision for the exploration. There is no need to defer opening and trimming the knuckle of gut, as there is no fear of infecting the wound or wounds if a covering of bismuth and iodoform paste is applied under a separate dressing. In the one-stage operation it is obvious that a Paul's tube can be tied in.

With regard to the treatment of carcinoma of the rectum in general, I sometimes use the combined method, and more often the perineal, with removal of the coccyx and the last segment of the sacrum, a thorough exploration and a colostomy opening having been made some days previously.

I am convinced that the mortality of the combined method is very much greater than that of the two-stage operation, and I am not convinced that the percentage of "cures" is much more by one method than by the other, provided a preliminary exploration is insisted upon in every case. To put the matter shortly, in order to elicit discussion, I may state the teaching which I give to students. When the growth is in the portion of the bowel which has no mesentery, remove it by the two-stage method, unless there are glands high up which one has to remove. When the growth is situated higher up it is better to remove it by the combined method. I will not describe the steps of the operation performed, but for combined operation will refer to the beautifully illustrated description by the late Edward H. Taylor in his *Operative Surgery* (1914), and for the perineal method I cannot improve upon the

technique described by Mr. J. P. Lockhart-Mummery in the *Medical Annual* for 1924. In the latter method I find that working from the anal region upwards is much easier than the older method of freeing the rectum above before excising the anus.

The question—whether it is ever advisable to preserve the anal sphincters—remains. I have been much struck by the following paragraph in E. H. Taylor's book already mentioned, which shows the opinion he held before 1914. "The radical measures which are employed in the treatment of rectal cancer have as their object the complete removal of the disease and the re-establishment of normal sphincteric control." In 1924 the majority of surgeons appear to favour a permanent colostomy and sacrifice the sphincters in every case. Whether this is right or wrong I have not yet had sufficient experience to decide, but I feel that to eradicate the disease is the main thing, and that striving after sphincteric control may lead to inefficient operations.

HAEMOLYTIC STREPTOCOCCAL INFECTION: RECOVERY.

BY

ARTHUR F. COLE, F.R.C.S. EDIN.,

WEST MALLING, KENT.

IN view of the fact that in both medical and lay circles conversation often ranges upon the utter failure or tremendous success of dental extractions in certain systemic infections, this case, carefully followed by a number of observers, should be of interest. As a problem in diagnosis it exercised many, and its happy termination does not prevent one from thinking over the possibility of better methods of treatment, and, above all, earlier diagnosis in similar cases of pyrexia of unknown origin.

On November 6th, 1921, Michael R., aged 19, a student of medicine at Cambridge, complained of malaise and anorexia and fever, followed twelve days later by jaundice and gradual recovery. On November 28th he had a rigor, with violent headache, a temperature of 105°, and profuse sweating simulating malaria. He resumed his studies, and nine days later had his third attack.

On December 19th the patient came under my observation with a further rigor, high temperature, etc., and pains in the hepatic region. Blood examination excluded malaria, and showed a leucocytosis of 15,000 per c.mm.—polymorphs 84 per cent., lymphocytes 12 per cent., hyalines 4 per cent. After two further attacks of a similar type, showing almost identical differential leucocytosis, he was seen by Sir Humphry Rolleston. Cholecystitis was diagnosed, and hexamine and salicylates prescribed, with dieting. A fortnight later the seventh attack showed an increased leucocytosis and the polymorphs rose to 87 per cent. of the total.

Specimens of urine and faeces were examined by Dr. P. J. Cammidge on February 1st, 1922, and found fairly normal, though the latter contained coliforms and streptococci; he diagnosed catarrh of upper intestine, with secondary cholangitis and pancreatitis. The next attack was accompanied by more marked hepatic pain and an easily palpable spleen, and Sir Humphry Rolleston again saw the case; he found a submucosal haematoma, half an inch in diameter, on the pharyngeal wall. During the apyrexial interval following the blood was again examined: Total leucocytes 6,000 per c.mm.—polymorphs 46 per cent., lymphocytes 50 per cent., hyalines 4 per cent. A catheter specimen of urine was sterile.

The patient was seen again on March 5th. He had been looking seedy for some days, and on this day the right side of the face was slightly swollen, but there was not the slightest pain in face or teeth. It was suggested that there might be a septic focus in connexion with the teeth or accessory air sinuses; his mouth appeared to be in perfect repair, and had been recently overhauled by the dentist. Shortly after midday the ninth attack commenced, with hepatic pain, high temperature, and rigor; the spleen was still palpable and tender. A blood film showed nothing abnormal; leucocyte count 11,400; differential not done. Blood cultures were taken during this attack; both plates and broth remained sterile.

On March 16th an x-ray examination by Dr. Charles A. Clark showed both antra quite clear, but the second right upper premolar was a dead tooth with much swollen periodontal membrane and bone destruction at apex, indicating a chronic abscess. Twelve days later the tenth rigor occurred with hepatic pain and sweating; there was slight fullness of the right side of the face, but no pain in the teeth. It was decided to remove the suspected upper premolar as a likely focus of sepsis.

On March 30th the tooth was very carefully removed under nitrous oxide and from the injected root cultures were taken on agar and blood serum. The former remained sterile; the latter gave "almost pure culture of haemolytic streptococci." On April 10th and 14th an autogenous vaccine (streptococcal) was given in 2 and

4 minim doses respectively. Thirty-one hours after the second dose, about 4.30 a.m., the patient woke up shivering; temperature 105°, followed by sweating. There was no pain over the liver, but some splenic tenderness. Headache severe; tongue clean; face not swollen. On examination of the blood no parasites were seen. A leucocyte count showed 26,000 per c.mm.—polymorphs 81.5 per cent., lymphocytes 10 per cent., transitionals 8.5 per cent. On the question whether the above attack was similar to previous attacks the patient was emphatic that it was quite different; on the question as to whether the vaccine treatment was the cause, the long delay in onset (thirty-one hours) after the last injection was considered by Sir Almroth Wright to be somewhat against this theory, even if the doses had been too close together. About this time Dr. A. L. Punch of Brompton Hospital tested the blood by the complement fixation method for tuberculosis and found it negative.

On May 22nd he developed measles at Cambridge, twenty-eight days after leaving home. Subsequently he was operated on by Mr. Sidney Scott, F.R.C.S., for acute otitis media, and the lateral sinus had to be explored.

On July 8th diplopia developed. Mr. Holmes Spicer, F.R.C.S., reported homonymous hemianopia and convergent strabismus about 20 degrees, mainly left eye. There was no apparent diminution of movements in either eye. There was severe optic neuritis of the right eye and many retinal haemorrhages; the retinal veins were very full and tortuous. In the left eye the disc was highly coloured, the veins were full, and there was one haemorrhage on the nasal side of the optic disc. The right optic neuritis was still present on July 17th, but subsiding.

On October 2nd the right optic disc was still seen with *plus* four lens; the haemorrhages had all gone—a few dots remained outside the optic disc. Dr. Henry Cotton of University College Hospital made a thorough examination of the heart: he found it was slightly enlarged but within normal limits; there was no evidence of any valvular disease, past or present. He considered the prognosis good. Further radiographic examination was made by Dr. W. C. Long of Tunbridge Wells, with special reference to lungs, liver, and face. Nothing abnormal was discovered.

When seen in March, 1925, the patient seemed in perfect health and was engaged in medical study. He had put on a stone in weight, and was keen on athletic exercise. It is now three and a half years since his severe illness commenced, and during the last two and a half years he has been in normal health.

So far as one can see, the patient has overcome the very severe infection by a haemolytic streptococcus, twice isolated in almost pure culture—first from the dental root abscess, then from the mastoid discharge; the presence of streptococci in faeces may also have been connected with the marked hepatic and other symptoms which led to the opinion that there was an inflammation of the upper intestinal tract. Apparently no permanent organic change has taken place, though there is still a slight enlargement of both heart and spleen. It seems reasonable to consider the turning point to have been the extraction of an infected tooth which had given no trouble, and which the dentist had considered healthy a short time previously. Although blood culture during one of the acute attacks was negative, it is probable that streptococci were in the circulation at some period, and the extension to the meninges evidenced by the optic neuritis and strabismus makes the complete recovery of the patient all the more noteworthy, and should be an encouragement to those treating similar cases.

What, then, was the factor or factors which led to the triumph of the body defences? Most will allow that the removal of a septic focus was necessary; but how difficult to find in some cases, and how easy it is to be wise after the event! Drugs probably had very little influence. Secondly, a factor in recovery was the natural vaccine therapy of the body; this was either continuously in operation, or at those crises when rigors and high temperatures occurred—*ten* during four and a half months. Whether the few injections of autogenous vaccine helped or hindered is a question; in the matter of dosage and intervals between doses upon which Sir Almroth Wright has taught and is teaching, one realizes that Nature may be hindered instead of helped. The method of immunotransfusion, in which the blood of a suitable and healthy individual treated by vaccines is then transferred to the circulation of the patient, would seem to be ideal for such acute and anxious cases as this.

Finally, it is possible that clinical observations are correct in suggesting that one disease may oust another. Incompatibilities may exist between diseases; the onset of measles in this case may have been the decisive factor in determining recovery from a streptococcal infection so often fatal. Compare the effect of artificially produced tertian malaria upon the progress of general paralysis of the insane, and the effect of induced abscess formation upon kala-azar in the pre-antimony tartrate injection period.

Note by SIR W. H. WILLCOX, K.C.I.E., M.D.

The case described is of very great interest. The symptoms pointed clearly to a septicaemic infection of focal origin. The recurring attacks of rigors and high temperatures were undoubtedly due to recurring invasions of the blood stream with pathogenic organisms. The jaundice occurring early in the attack was no doubt due to a hepatitis resulting from the septic invasion. It seems clear that in this case the primary focus was an apical dental infection of the second right upper premolar, which was disclosed by x-ray examination of the teeth. A point of great interest is the relative increase in the lymphocyte count (50 per cent.) on February 19th, 1922, associated with a total leucocyte count of 6,000 per c.mm. (a slight leucopenia). I have often observed this phenomenon in cases of chronic septicaemia of dental origin. The organism seems to have been a haemolytic streptococcus associated with the apical dental infection, and the severe reaction after the autogenous vaccine confirms this view. The eradication of the primary focus of sepsis marked an important improvement in the patient's condition and the recurring rigors ceased—in other words, the big septicaemic invasions were stopped.

In cases of this type the removal of the primary focus of infection, if it is of long standing as in this case, is not necessarily followed by complete cure, because secondary smaller foci have probably become established in the bowel or elsewhere. In this case it is probable that this secondary infection was the result of the otitis media following the attack of measles. The inoculations probably played only a small part in the recovery of the patient, his immunity being no doubt mainly the result of the streptococcal invasions after the primary focus of sepsis had been removed. Had the primary focus remained it is very unlikely that immunity would have been established.

The case is similar to other acute cases which have been under my observation, and illustrates the supreme importance of the most careful search for foci of sepsis—in the teeth, tonsils, antra, bowel, kidney, bladder, etc.—in cases of obscure septicaemia. It also illustrates the great importance of the removal, if possible, of the primary focus of sepsis, without which continued improvement is impossible.

A FATAL INJURY OF THE VAGINA.

BY

R. BLAIR, M.B., CH.B.,

RECENTLY R.M.O. IN DUNDEE ROYAL INFIRMARY.

IN 1899 F. Neugebauer, under the title "*Venus cruenta violans interdum occidens*,"¹ reported on over 150 cases of coital injury gathered from publications; but individual cases still have interest, which, in the case here reported, is heightened by the unusual sequel. Of Neugebauer's list twelve cases were younger than 16 years and six older than 40—namely, 45, 47, 48, 50, 58, 59. (R. C. B.)

A woman, aged 55, was admitted under Dr. R. C. Buist's care on January 1st. She had had three pregnancies—twice twins. The menopause occurred at 40. She had become a widow, but remarried four months previously, and a week before admission felt pain during coitus. Bleeding followed, and continued a few days, being aggravated by vaginal examination or by douching. Three days before admission shivering attacks began and had continued; she became very ill, and was admitted to hospital. She was thin, ill, and deeply jaundiced, and complained of headache. The temperature was 99°, the pulse 98, and the respiration 24; the skin was dry, the tongue dry and furred. No abnormal signs were found in the chest or abdomen. Pelvic examination showed: senile vagina, uterus small and anterior, os closed; appendages normal. Inspection with speculum showed a tear 3 in. long running down the right side from the fornix, tapering off toward the vaginal entrance and sealed with clot. The leucocyte count gave 10,000, with 77 per cent. polymorphs. The very dark urine contained bile pigment; Fouchet's test was definitely positive. Glucose-saline solution was given by rectum, at first continuously and then every four hours, and submammary saline injections were given also. Fixation abscess was sought to be obtained on two occasions, but only induration resulted. Nuclein was given hypodermically and then by mouth. Blood culture was negative on two occasions.

On January 4th jaundice had deepened; the left parotid was swollen, but it subsided without suppuration. On January 5th the

¹ *Monats. f. Geburtsh. u. Gynaek.*, 1899, ix, 221, 389.